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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,967	09/25/2006	Nicolas Nadaud	293259US0PCT	6539

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EXAMINER	
COLEMAN, RYAN L	

ART UNIT	PAPER NUMBER
1714	

NOTIFICATION DATE	DELIVERY MODE
02/10/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/586,967	NADAUD ET AL.	
	Examiner	Art Unit	
	RYAN COLEMAN	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) *11-19 and 24-29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 20-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 27, 2010 has been entered. Claims 1-29 are pending. Claims 11-19 and 24-29 have been withdrawn from consideration.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 2, 5-7, 9, 10, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2004/0020761 by Thomsen et al. (hereafter referred to as "Thomsen '761") in view of U.S. Patent Application Publication No. 2003/0064198 by Thomsen et al. (hereafter referred to as "Thomsen '198") in view of U.S. Patent Application Publication No. 2002/0012798 by Veerasamy (hereafter referred to as "Veerasamy '798").

6. With regard to claims 1, 2, 9, and 20, Thomsen '761 teaches a method for the continuous vacuum cleaning of a glass substrate that involves moving the glass substrate through a vacuumed, low pressure chamber while cleaning the top of the substrate with an ion beam source (not shown in the Figures; reads on *linear ion source*) located above the substrate and subsequently, without breaking vacuum, depositing a multilayer coating on the cleaned surface with a sputtering target (item 65 in Figure 2) that is also located in the vacuumed, low pressure chamber (Par. 0028 and 0030-0033; Figure 2).

7. Thomsen '761 does not teach using a gas mixture comprising oxygen as the feedstock gas for the ion beam source that is used for cleaning.

8. Thomsen '198 teaches that when using an ion beam source to clean the surface of a glass substrate, it is advantageous to use a mixture of argon gas and oxygen gas as the feedstock gas for the ion beam source because the mixture results in the fast and efficient removal of contaminates from the surface and the oxygen beneficially prevents iron from being sputtered onto the substrate surface (Par. 0012 and 0054).

9. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Thomsen '761 by using a mixture of argon gas and oxygen gas as the feedstock gas for the ion beam source that is used for cleaning. The motivation for performing the modification was provided by Thomsen '198, who taught that when using the mixture as a feedstock for an ion beam source, the mixture can quickly and efficiently remove contaminates from a glass surface and that the oxygen can beneficially function to prevent iron from being sputtered onto the substrate surface.

10. The combination of Thomsen '761 in view of Thomsen '198, as developed thus far, does not teach that the mixture of oxygen and argon comprises predominantly oxygen.

11. Veerasamy '798 teaches that when cleaning a glass substrate prior to depositing a multilayer coating on the substrate, an ion beam with gas can be used to remove the undesired material from the surface and gases with atomic weights ranging from 28 to 40 amu can perform the cleaning (Par. 0001, 0010-0017, and 0066). Veerasamy '798

teaches that oxygen gas is the preferred gas for performing the cleaning because of its atomic weight of 32 amu (Par. 0066).

12. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Thomsen '761 in view of Thomsen '198 by optimizing the concentration of oxygen in the cleaning mixture of oxygen and argon (MPEP 2144.05, *Optimization of Ranges*). Argon has an atomic weight of 40 amu and oxygen has an atomic weight of 32 amu, and Veerasamy '798 teaches that the atomic weight of a gas used by an ion beam to clean a glass substrate is a result effective variable because Veerasamy '798 teaches that gas with an atomic weight of 32 amu is preferable to other gases having atomic weights between 28 and 40 amu. Since Veerasamy '798 teaches that atomic weight is a result effective variable when an ion beam is used to clean a glass substrate, it is the examiner's position that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Thomsen '761 in view of Thomsen '198 by optimizing the concentration of oxygen in the mixture of oxygen and argon because oxygen and argon have different atomic weights and Veerasamy '798 teaches that the atomic weight of oxygen is preferred.

13. With regard to claim 5, in the method of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798, there is considered to be relative movement between the ion bean source and the glass substrate because Thomsen '761 teaches using rollers (item 63 in Figure 2 of Thomsen '761) to move the glass substrate while the substrate is treated with the ion beam source (Par. 0028 and 0033; Figure 2 of Thomsen '761).

14. With regard to claim 6, in the method of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798, the ion beam source is positioned to expose the glass substrate's surface to a plasma beam formed with a mixture of argon and oxygen, and as taught by Thomsen '198, when cleaning a glass substrate with such a gas mixture, the oxygen prevents iron from being sputtered onto the substrate surface (Par. 0012 of Thomsen '198). In addition, since the combination of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 teaches performing the same method steps with the same materials as those claimed by applicant, the effect of having the average sputtering efficiency of the ionized species not allow sputtering of the treated surface is expected to occur in the method of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798.

15. With regard to claim 7, in the method of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798, the ion beam source is positioned within a coating apparatus (reads on *plant*) of industrial size because the coating apparatus can be used to perform industrial activity (Par. 0028 and 0033).

16. With regard to claim 10, in the method of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798, two different surface portions of the substrate are considered to be successively treated with the cleaning plasma from the ion beam source because Thomsen '761 teaches using rollers (item 63 in Figure 2 of Thomsen '761) to move the substrate relative to the ion beam source such that different surface portions of the substrate can be treated (Par. 0028 and 0033; Figure 2 of Thomsen '761).

17. Claims 8, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 as applied to claim 1 above, and further in view of U.S. Patent Application Publication No. 2002/0117250 by Veerasamy (hereafter referred to as Veerasamy '250).

18. With regard to claims 8, 22, and 23, the combination of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 teaches using the ion beam source to generate a collimated beam of ions (Par. 0037 and 0038).

19. The combination of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 does not specify the energy of the ions that are in the collimated beam.

20. Veerasamy '250 teaches that when using a linear ion beam of ions to remove undesired material from a glass substrate, the energy of the ions is a result-effective variable because some energy values are more preferable than others (Par. 0050 and 0051).

21. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 by optimizing the energy of the ions in the ion beam that is used to remove undesired material from the glass substrate because, as taught by Veerasamy '250, the energy of such ions is a result-effective variable (MPEP 2144.05, *Optimization of Ranges*).

22. Claims 3 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 as applied to claim 2 above, and further in view of U.S. Patent No. 4,891,113 to Criss.

23. With regard to claims 3 and 21, the combination of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 teaches using glass substrates treated with the cleaning method as windows in architectural structures (Par. 0035 of Thomsen '761).

24. The combination of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 does not teach that a thin film is deposited onto a glass substrate with a cathode sputtering process.

25. Criss teaches that magnetically enhanced cathode sputtering can be used to deposit solar energy control films onto glass substrates that are to be used as a windows in architectural structures (Col. 1, 9-38; Col. 2, 14-24; Claims 1 and 2). Criss teaches that such solar energy control films can advantageously be used to control the amount of solar energy that passes through a window such that the cost of heating or cooling an architectural structure with such windows can be reduced (Col. 1, 19-38; Col. 2, 14-24).

26. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 such that a magnetically enhanced cathode sputtering system is used as the sputtering target 65. The motivation for performing the modification was provided by Criss, who teaches that magnetically enhanced sputtering can be used to deposit solar energy control films onto architectural glass substrates in order to advantageously reduce the cost of heating or cooling a building that uses such glass substrates as windows.

27. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 as applied to claim 2 above, and further in view of U.S. Patent Application Publication No. 2004/0163945 by Hartig.

28. With regard to claim 4, the combination of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 teaches using glass substrates treated with the cleaning method as windows in architectural structures (Par. 0035 of Thomsen '761).

29. The combination of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 does not teach that a thin film is deposited onto a glass substrate with a chemical vapor deposition technique.

30. Hartig teaches forming thin films on glass substrates that are to be used in architectural structures such that the reflectivity and emissivity of the glass can be advantageously modified (Par. 0002 and 0003). Hartig teaches that forming such films with sputtering techniques is undesirable because the manufacturing process must be interrupted when a sputtering target needs to be replaced and the sputtering process can cause undesirable contamination to build up on the surfaces of the processing equipment (Par. 0004-0009). Hartig teaches that it is desirable to use plasma-enhanced chemical vapor deposition to form such thin films on glass substrates instead of using the undesirable technique of sputtering (Par. 0021, 0022, and 0041-0044).

31. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Thomsen '761 in view of Thomsen '198 in view of Veerasamy '798 by substituting the sputtering target 65 with a plasma-enhanced chemical vapor deposition system (MPEP 2143, Rationale B). The motivation for

performing the modification was provided by Hartig, who taught that when depositing thin films onto glass substrates, plasma-enhanced chemical vapor deposition is the more desirable technique than sputtering because sputtering requires that the manufacturing process be interrupted whenever the sputtering target needs to be replaced.

Response to Arguments

32. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN COLEMAN whose telephone number is (571)270-7376. The examiner can normally be reached on Monday-Friday, 9-5.

34. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on (571)272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

35. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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